For Loops, Deconstructed

Chat Netiquette Experiment

- ask question with voice, or
- post question in the chat
- resist answering questions of other students (unless you are a SL)
- do answer my questions in the chat
- do not stop using chat 😊

🙏

Review

```python
MONDAY = 1
FRIDAY = 5
SATURDAY = 6
SUNDAY = 7


def main():
    print("Should I go to school?")
    day = int(input("Enter a day: "))
    if day >= MONDAY and day <= FRIDAY:
        print("School day")
    elif day == SATURDAY or day == SUNDAY:
        print("Weekend!")
    else:
        print(str(day) + " is not a day!")


if __name__ == '__main__':
    main()
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Operator	Example	Result
not	not (2 == 3)	True
and	(2 == 3) and (-1 < 5)	False
or	(2 == 3) or (-1 < 5)	True

```python
def main():
    number = int(input("Enter a year: "))

    correct = not number < 0 and number <= 2020 or number > 2019 and number != 2021

    print(correct)
```

```
number = 2021
```

```python
def main():
    number = int(input("Enter a year: "))

    correct = not number < 0 and number <= 2020 or number > 2019 and number != 2021

    print(correct)
```

```
number = -5
```

```python
def main():
    number = int(input("Enter a year: "))

    correct = not number < 0 and number <= 2020 or number > 2019 and number != 2021

    print(correct)
```

number = 2020

```python
def main():
    number = int(input("Enter a year: "))

    correct = not number < 0 and number <= 2020 or number > 2019 and number != 2021

    print(correct)
```

```
number = 15
```

```python
def main():
    number = int(input("Enter a year: "))

    correct = not number < 0 and number <= 2020 or number > 2019 and number != 2021

    print(correct)
```

```python
def main():
    number = int(input("Enter a year: "))

    correct = not number < 0 and number <= 2020 or number > 2019 and number != 2021

    print(correct)
```

```python
"""
Print the powers of 2 up to 1024
"""

MAX = 1024


def main():
    number = 1

    while number <= 1024:
        print(number * 2)
```

```python
"""
Print the powers of 2 up to 1024
"""

MAX = 1024


def main():
    number = 1

    while number <= 1024:
        print(number * 2)
```

po
2
2
2
2
2
2
2
2
2
2
2
2
2
2
2
2
2
o

```python
"""
Print the powers of 2 up to 1024
"""

MAX = 1024


def main():
    number = 1

    while number <= 1024:
        print(number)
        number *= 2
```

```
1
2
4
8
16
32
64
128
256
512
1024
```
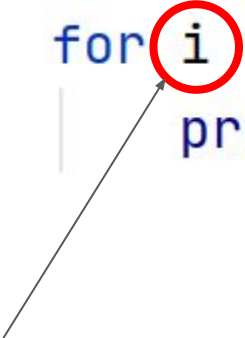
For Loops

```python
for i in range(5):
    print("CS Bridge is awesome!")
```

```
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
```

```python
for i in range(5):
    print("CS Bridge is awesome!")
```

index variable

```
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
```

```python
for count in range(5):
    print("CS Bridge is awesome!")
```

```
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
```

```
for count in range(5):
    print("CS Bridge is awesome!")
```

What is the value of the index variable?

```
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
CS Bridge is awesome!
```

```python
for i in range(5):
    print("i = " + str(i))
```

```
i = 0
i = 1
i = 2
i = 3
i = 4
```

```
for i in range(5):
    print("i = " + str(i))
```

Can the range be an expression?

```
i = 0
i = 1
i = 2
i = 3
i = 4
```

```python
upper_bound = int(input("Enter the upper bound: "))
for i in range(upper_bound):
    print("i = " + str(i))
```

```
Enter the upper bound: 3
i = 0
i = 1
i = 2
```

```python
print("The numbers between 10 and 15:")
for i in range(10, 16):
    print("the number is " + str(i))
```

```
The numbers between 10 and 15:
the number is 10
the number is 11
the number is 12
the number is 13
the number is 14
the number is 15
```

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):
    print(i)
```

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):
    print(i)
```

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):
    print(i)
```

The the even numbers between 10 and 14:

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):    i: 10
    print(i)
```

The the even numbers between 10 and 14:

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):    i: 10
    print(i)
```

The the even numbers between 10 and 14:
10

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):    i: 12
    print(i)
```

```
The the even numbers between 10 and 14:
10
```

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):    i: 12
    print(i)
```

```
The the even numbers between 10 and 14:
10
12
```

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):    i: 14
    print(i)
```

```
The the even numbers between 10 and 14:
10
12
```

```
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):    i: 14
    print(i)
```

```
The the even numbers between 10 and 14:
10
12
14
```

```python
print("The the even numbers between 10 and 14:")
for i in range(10, 15, 2):
    print(i)
```

What about the odd numbers between 10 and 14?

```
The the even numbers between 10 and 14:
10
12
14
```

```python
print("The the odd numbers between 10 and 20:")
for i in range(11, 21, 2):
    print(i)
```

```
The the odd numbers between 10 and 20:
11
13
15
17
19
```

How to do a countdown?

```
Countdown from: 5
5
4
3
2
1
START
```

```python
start = int(input("Countdown from: "))
for i in range(start, 0, -1):
    print(i)
print("START")
```

```
Countdown from: 5
5
4
3
2
1
START
```

```
for i in range(N):
    print(i)
```

i = 0, 1, 2, …, N−1

$$i \in \mathbb{N}_0 \wedge i \in \langle 0; N)$$

```
for i in range(M, N):
    print(i)
```

i = M, M+1, M+2, …, N−1

$$i \in \mathbb{Z} \wedge i \in \langle M; N)$$

```python
for i in range(M, N, S):
    print(i)
```

i = M, M+S, M+2S, M+3S, …
i < N

Morning Project [here]

That's Some Sum!
Quickstart
SL Notes

Loop variables

Carbon Dating
Project
SL Notes

Loop variables

Looking for more? Check out the optional bonus problems!